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# FINAL REPORT AND QUESTIONNAIRE

# FOR THE

# ONTARIO MENTAL HEALTH FOUNDATION

LOCATION: ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

TITLE: EFFICACY OF A CONVERSATIONAL MODEL OF LANGUAGE INTERVENTION

This study investigated the effectiveness of a conversational model of language intervention which instructs parents of children with developmental delay to increase their responsiveness and decrease directiveness. In turn, this interaction style is presumed to increase opportunities to participate in interaction and accelerate the children's socio-communicative and language development. The rationale for this intervention approach is rooted in the findings from comparative studies that suggest parents of developmentally delayed children are more directive and less responsive than parents of nonhandicapped children, matched on measures of developmental level (e.g. Cunningham, Reuler, Blackwell, & Deck, 1981; Jones, 1980; Peterson & Sherrod, 1982; Tannock, 1988). Although the direction of influence cannot be ascertained from these comparative studies, many investigators have proposed that the parents' directive and nonresponsive style of interaction may interfere with these children's acquisition of language (e.g. Erheart, 1982; Mahoney & Seely, 1976).

This study included an untreated control group with random assignment of families to the experimental or control group. It improves upon previous evaluation studies by: (a) stratifying for developmental level in order to investigate the effectiveness of this intervention approach for prelinguistic as well as linguistic children; (b) using multiple measures of child participation, socio-communicative skills and language abilities, in order to delineate the full effects of the program on the child; (c) investigating longer-term or delayed treatment effects by assessing parents and children four months post-program as well as immediately at the end of the treatment program; and (d) incorporating a replication component by examining changes made by the control group subsequent to treatment following the control phase.

A total of 32 families with a developmentally delayed child between the ages of 14 to 60 months, were randomly assigned to a treatment group or a waiting-list control group. The control group received the program as soon as the treatment group had completed both the entire 12-week package and the post-program testing session. Families were stratified for the child's mental age (MA); children with an MA less than 16 months formed the "low" group; those with an MA greater than 16 months formed the "high" group. Both mothers and fathers participated in the intervention program. Maternal data was the focus of the present study.

Data were derived from multiple sources including; (a) 10-minute videotaped samples of free-play interaction between mother and child (transcribed and coded using a system designed to measure turntaking, responsiveness and directiveness in parent-child interaction (Tannock, 1988); (b) structured tasks to elicit specific

socio-communicative behaviours from the child (The Early Social Communication Scales (ESCS), Seibert & Hogan, 1982); (c) a norm-referenced test of receptive language (Sequenced Inventory of Communication Development Receptive Language Scale (SICD-R), Hedrick, Prather & Tobin, 1975); (d) parental diaries of the child's vocabulary; and (e) parents' perceptions of program effectiveness for themselves and the child (post-program questionnaire). Three assessments were conducted at intervals of four months - pre-program, post-program, and follow-up.

Unequivocal treatment effects were found for some measures of maternal response control (i.e., manding behaviour) and use of contextual language. Specifically, after intervention the treatment mothers used more comments, provided specific verbal labels for objects to which the child was attending, and decreased their use of nonspecific referents (e.g., this one, that thing), than the control mothers. These changes were consistent with program objectives. No clear treatment effects were found for any of the child outcome measures. Nor were there any differential effects of the child's developmental level. Treatment effects for maternal topic control and responsiveness, and for child participation were equivocal, in that the existence of pretreatment differences between the treatment and control groups makes it difficult to interpret the data. In contrast to the minimal evidence of treatment effects for the child, clear maturation effects were found for children's participation, sociocommunicative skills, receptive language, and vocabulary acquisition.

The third assessment time allowed us to examine both maintainance of change in the treatment group and treatment effects in the control group since they received the intervention program after the treatment group. These data suggested that treatment mothers generally maintained the aforementioned changes that were observed at post-test. Moreover, similar treatment effects were observed in control group, after they received intervention, replicating our previous findings of increased use of comments and specific referents, and decreased topic control. The majority of parents percieved the program to be effective in changing their own behaviour, resulting in more positive interactions with their child, but only 50% thought that the program had improved the children's language abilities.

## QUESTIONNAIRE

1. Major Outcome - The program effectively trained parents; enhanced the social participation skills of children with developmental delay, but did not raise language abilities of children.

2. Need for Further Studies - Further investigation of the model's efficacy for children whose parents are "at risk" would contribute valuable information on the theoretical integrity of the model. In addition, research on the efficacy of individual components of the program would support/refute the model's basic assumptions about parental responsiveness, directiveness, and teaching conditions (follow-in, direct).

3. Clinical Applications - Our work suggest that clinician's should screen parents for program eligibility, reassess desired levels of parental responsiveness/directiveness and introduce a "focussed stimulation" approach.

4. Unexpected Results - We found no evidence that this parent-focused intervention program accelerated the development of socio-interactional or language skills.

5. Objectives - All of our objectives were attained for children with developmental delay. A planned comparison group (children with specific language delay) was not located due to scarcity of subjects and matching restrictions.

6. Publications - One article is published; 3 manuscripts are currently in review (enclosed).

7. Presentations - The following presentations were made.

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| 1988, August | Dublin, Ireland | IASSMD | 2 papers |
| 1988, November | Boston, USA | AHSA | 1 paper |
| 1989, March | San Antonio, USA | ASHF | 1 paper |
| 1989, November | St. Louis, USA | ASHA | 1 paper |
| | | | 1 poster |

8. Research Careers - All investigators have been and are currently involved in research careers.

9. Foundation's Assistance - The Foundation was extremely helpful, and willingly supported our requests for extensions and reallocation of funds. In contrast, the lack of continuation funds for subsequent research makes it difficult to sustain a cohesive, long-term plan of research.

**Date:** Aug 20, 1990 **Signature:** L Oxlamotto for Linda Siegel

# FINAL REPORT FOR THE

# MINISTRY OF COMMUNITY AND SOCIAL SERVICES

LOCATION: ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

TITLE: EFFICACY OF A CONVERSATIONAL MODEL OF LANGUAGE INTERVENTION

## Introduction

In compliance with the guidelines set by the Ministry, this report is divided into 6 sections (literature review, hypotheses, methodology, analyses, discussion of findings and appendix). Detailed information may be found in the enclosed manuscripts which have been submitted for publication.

## Literature Review

The early, reciprocal, social interactions between parent and child are believed to influence the rate and pattern of early language development (e.g., Bruner, 1975; Snow & Ferguson, 1978). Of concern, therefore, are the findings that developmentally delayed children and their parents exhibit difficulties in their early interactions (e.g., Marfo, 1984). Developmentally delayed children tend to initiate less and their mothers tend to be more directive and less responsive, in comparison with nonhandicapped children and their parents, even when the children are matched on measures of developmental competence (Cunningham, Reuler, Blackwell, & Deck, 1981; Eheart, 1982; Hanzlik & Stevenson, 1986; Jones ,1980; Petersen & Sherrod, 1982; Tannock, 1988). Although these comparative studies have not provided an empirical basis for suggesting a causal relationship (Crawley & Spiker, 1983), the prevailing interpretation is that these parents' directive, nonresponsive style of interaction may interfere with the child's development of socio-interactional skills (e.g., turntaking, initiating, responding) and linguistic skills (e.g, Mahoney & Powell, 1988; Maurer & Sherrod, 1987).

Numerous language intervention programs have been developed to modify the interaction style of parents of developmentally delayed children, including: the Transactional Intervention Program (Mahoney & Powell, 1986); the "Conversational Engineering" program (McDonald & Gillette, 1984); and the Hanen Early Language Parent Program (Manolson, 1985). All programs share the common goals of encouraging parents to become more responsive and less dominant and directive. This approach, which we refer to as "an interactive model of language intervention" assumes that enhanced levels of parent responsiveness and decreased directiveness will provide increased opportunities for the child to participate in interaction. In turn, these increased opportunities to participate in reciprocal interactions will facilitate the child's development of socio-interactional skills and accelerate language development. The effectiveness of this model of intervention is suggested by a number of studies reporting favorable outcomes for both parents and their developmentally delayed children (e.g., Girolametto, 1988; MacDonald, 1989; Mahoney & Powell, 1988; Seitz, 1975; Weistuch & Lewis, 1986). A number of methodological weaknesses in most of the previous studies limit the conclusions that can be made concerning the effectiveness of this model of intervention for developmentally delayed children. For example, some failed to include an untreated

control group, thereby precluding the evaluation of treatment effects relative to maturation effects (Mahoney & Powell, 1988; Seitz, 1975). Also, in the two controlled studies by Weistuch & Lewis (1985; 1986), the treatment group included children without any cognitive impairment who may have accounted for most of the observed group differences. Most studies demonstrate a disproportionate emphasis on measuring parental change with few or even no measures of child outcome (e.g., Mahoney & Powell, 1986). Moreover, many of the changes reported for children reflect increases in frequency of use of various aspects of language rather than evidence of acquisition of new linguistic structures or socio-interactional functions (e.g., Girolametto, 1988; Seitz, 1975). Thus, although treatment effects reported for mothers appear consistent across both controlled and uncontrolled studies, it remains to be demonstrated that the interactive model of language intervention can enhance children's socio-interactional and linguistic skills, specifically in developmentally delayed children. Furthermore, the effectiveness of this intervention model for preverbal children is unknown, because most of the previous studies involved children who were already using single words or two-word combinations. Finally, the longer-term effects of this model of intervention are unknown because none of the previous studies included a follow-up study to investigate maintenance of change or delayed treatment effects.

The present study included an untreated control group with random assignment of families to the experimental or control group. It improved upon previous evaluation studies of the interactive model by: (a) stratifying for developmental level in order to investigate the effectiveness of this model of interention for preverbal as well as verbal children; (b) including measures of both frequency of use and acquisition of various sociocommunicative and linguistic abilities; (c) investigating longer-term or delayed treatment effects by assessing parents and children four months post-program as well as immediately at the end of treatment; and (d) incorporating a replication component by examining changes made by the control group subsequent to treatment following the control phase.

We selected the Hanen Early Language Parent Program (Manolson, 1985) as the treatment program because it is used by numerous clinicians throughout Canada and the United States. Also, the excellent documentation of the program's protocol, together with the availability of speech/language pathologists who were trained and experienced in using this approach, allowed us to ensure program fidelity (i.e., that the program was implemented as originally described by the developers). The study was designed to evaluate the effectiveness of the complete intervention package as it is usually implemented in a clinical setting.

## Hypotheses

We hypothesized that short-term effects of the treatment program would be reflected in increased maternal responsiveness and decreased maternal directiveness, and that these treatment effects for mothers would still be discernible four months later at the follow-up assessment. We also hypothesized that these maternal changes would be accompanied by increases in children's participation in interaction (e.g., more frequent turntaking, increased initiation and responsiveness), but that developmental changes in sociocommunicative and linguistic abilities would be

manifested as longer-term effects discernible only at the follow-up asesssment when the children had had more opportunity to benefit from the changes induced in the parents' style of interaction.

## Methodology

Thirty-two preschool-aged, developmentally delayed children and their mothers participated in this study. All families had expressed an interest in this approach to intervention, and were recruited primarily from waiting lists for parent-focussed language intervention programs offered by several agencies throughout Metropolitan Toronto. The parents and children had all participated in early infant stimulation programs, but had not received specific speech, language or communication remediation. Families were randomly assigned to an experimental and control group, with stratification for mental age (MA): low MA, less than 16 months; or high MA, greater than 16 months. The control families received the intervention program four months later.

Parents of eligible children were randomly assigned to an immediate treatment group (experimental group) or a delayed treatment group (control group) with the constraint that the two groups were balanced in terms of developmental level of the child (low and high MA). The control families received the intervention program immediately after the experimental group completed their program. This 4-month delay is shorter than the average waiting period for therapy in clinics in Metropolitan Toronto. No attrition occurred. Each family in the experimental group participated in three assessments, conducted at four month intervals, viz., Time 1 (pretest), Time 2 (posttest) and Time 3 (follow-up). Control families participated in one additional assessment: Time 1 (pretest 1), Time 2 (pretest 2), Time 3 (posttest) and Time 4 (followup). All tests were conducted by qualified professionals who were unaware of the treatment status of the families and of the purpose of the study.

Prior to a center-based communication assessment, the child's developmental status was estimated using the Griffiths Mental Development Scales (Griffiths, 1970). These scales were administered at Time 1 only by a psychometrist during a home visit. Videotaped recordings of parent-child interaction and measures of the children's communicative and language skills were administered at every assessment session. Each mother-child dyad was videotaped while interacting together in a 15 minute free play situation in a simulated playroom. A set of toys was provided by the investigators, designed to promote social interaction (e.g., toy farm with miniature people and animals, blocks, doll with clothes and teaset). Parents were encouraged to interact with their children as they normally would at home: virtually all reported the observed interaction to be fairly typical of similar situations at home. Upon completion of the videotaped session, a speech/language pathologist joined the mother and child and administered the Receptive Scale of the Sequenced Inventory of Communication Development (SICD; Hedrick, Prather & Tobin, 1975), and the Early Social Communication Scales (ESCS; Seibert & Hogan, 1982). The ESCS consists of a series of semi-structured tasks designed to elicit specific discourse roles, e.g., initiating, responding, maintaining and social-communicative functions, e.g., social interaction, joint attention and behaviour regulation. Parental diaries of child vocabulary size and the completed Parenting Stress Index (Abidin, 1983) were collected at the end of each assessment.

Videotapes were transcribed and coded using the coding system developed by Tannock (1988) which was designed to capture the reciprocal nature of interaction. It classifies turn-taking behaviour and dialogue role (e.g., responses, intiations) and summoning power (i.e., comments, obliges) of mothers' and children's turns, as well as non-communicative behaviour. The coding system yeilds measures of turn-taking, responsiveness, directiveness and uninvolvment.

**Evaluation Model, Measures and Analyses**

A five-level evaluation model was used to investigate the "first order" or direct effects of the treatment on the parents' style of interaction and the "second order" or indirect effects of the treatment program on the child. (See Appendix A.) The first two levels of the model evaluate maternal outcome. Level 1 addresses mothers' involvement in the intervention program (i.e., attendance, homework completion); Level 2 addresses three clusters of maternal interaction strategies: child-orientation (topic control, responsiveness); interaction-promoting (turn-taking control, response control); and language modelling strategies (labels or referents). The specific dependent measures are defined in Appendix A. In addition, the Parenting Stress Index afforded a measure of the impact of intervention on the family unit.

The remaining three levels address child outcome measures which reflect the hypothesized order of intervention outcome. Level 3 evaluates the impact on the children's rate of participation in interaction and the frequency of vocal, verbal and nonverbal turns. The fourth level evaluates the hypothesized impact of the children's increased participation on their use and acquisition of socio-interactional skills (i.e., responding, initiating, maintaining topic). Finally, the fifth level evaluates the subsequent impact on language development (receptive skills, expressive lexicon).

A priori comparisons of the two groups at Time 1 were performed using *t*-tests for independent samples to assess pretreatment equivalence on the various parent and child outcome measures. For each dependent measure, in which there were significant pretest differences between groups, Mann-Whitney *U* tests were conducted on the pretest-posttest change scores (collapsed across MA level) to determine treatment effects. Notwithstanding the limitations associated with the analysis of difference scores, the results from these analyses allowed the identification of changes in the expected direction, irrespective of initial scores. [Although the analysis of covariance is frequently used to statistically partial out pretest variations, it cannot adequately control for significant pretest differences between groups (Adams, Brown & Grant, 1985).] For the purposes of simplicity, these results will be referred to as equivocal treatment results.

Where there were no pretest differences, a series of 2 x 2 x 2 repeated measures analyses of variance were used to assess treatment effects on outcome variables for parent and child, with group (experimental, control) and developmental level (low MA, high MA) as between-subjects factors, and assessment (Time 1, Time 2) as a within-subjects factor. Treatment effects were reflected in significant Group x Assessment or Level x Group x Assessment interactions. This rigorous statistical approach afforded detection of unequivocal treatment effects. Given that all hypotheses

regarding the treatment effect were directional, one-tailed tests of significance were used.

As already noted above, there was no control for the experimental group following the pretest. Therefore, in order to examine the maintenance of treatment effects a series of t-tests for paired-samples was used to compare posttest and follow-up data for the original treatment group (i.e., assessments at Time 3 and Time 4). Finally, in order to examine the replicability of treatment effects in the control group, Mann-Whitney U tests were used to compare pre-postintervention change scores for the two groups (Time 2 minus Time 1 for the experimental group; Time 3 minus Time 2 for the control group). The MA level distinction was collapsed for these analyses.

## Review of Results and Discussion

The major findings of this study were that, following intervention, the mothers in the experimental group used more child-oriented, interaction-promoting and language modelling strategies. Specifically, they were more responsive, less directive (in terms of both obliges and topic control), and used more specific referents in their responses to their children, than the control mothers. Experimental mothers were more likely to respond to the focus of a nonparticipating child, rather than attempt to redirect the child's attention to a mother-selected topic. Reciprocally, children of mothers in the treatment group increased their rate of vocal turns more than control children. No treatment effects were observed for the children's socio-interactional skills or language abilities.

The third assessment time allowed us to examine both maintainance of change in the treatment group and treatment effects in the control group since they received the intervention program after the treatment group. These data suggested that treatment mothers generally maintained the aforementioned changes that were observed at post-test. Moreover, similar treatment effects were observed in control group, after they received intervention, replicating our previous findings of increased use of comments and specific referents, and decreased topic control. The majority of parents perceived the program to be effective in changing their own behaviour, resulting in more positive interactions with their child, but only 50% thought that the program had improved the children's language abilities.

The observed treatment effects for experimental mothers were consistent with program objectives and provide strong evidence that the program was successful in effecting changes in the way parents interacted with their developmentally delayed child. Changes effected in maternal behaviour are consistent with findings from the few previous controlled intervention studies (e.g., Girolametto, 1988; Weistuch & Lewis 1986). Moreover, the present results indicate that these changes in maternal interactive behavior are maintained for at least four months following the termination of the intervention program. Furthermore, our results suggest that participation in this intensive program did not increase maternal stress. On the contrary, it appears to have allieviated their dissatisfaction with self and life circumstances.

In contrast to the positive outcome for mothers, treatment effects on children's behaviour were minimal and disappointing. The singular treatment effect found for children (increased vocal turns) may well have been a spurious finding. We found no evidence that

this parent-focused intervention program enhanced the socio-interactional skills and language development of the children in the experimental group. Our findings stand in sharp contradistinction with those reported in previous intervention studies (e.g., Girolametto, 1988; Mahoney & Powell, 1986; Weistuch & Lewis, 1986). Since only two of the aforementioned studies included a control group (Girolametto, 1988; Weistuch & Lewis, 1986), it is possible that the observed changes were attributable primarily to nontreatment variables such as maturation. Certainly, we found significant maturational effects for most measures of children's socio-interactional and language skills. Also it is possible that the treatment effect reported by Weistuch & Lewis (1986) was carried primarily by the specifically language impaired children in the group rather than by the developmentally delayed children. In a small-N but controlled study involving developmentally delayed children, Girolametto (1988) also failed to find treatment effects on children's language development as measured by a standardized test. However, treatment-related changes were reported for children's use of socio-interactional skills and lexical diversity in interaction with their mothers. The discrepant findings are not readily explained, but may be attributable in part to differences in measures and definitions, and/or to differences in entry skills of the parents (see below).

What cound account for the pattern of results - i.e., the positive outcome for the mothers and the absence of treatment effects for the children? Our results indicate that, in contrast to most descriptions of mothers of developmentally delayed children in the literature (e.g., Cunningham et al., 1981; Eheart, 1982), the mothers in the present study were already highly responsive to their children's cues, and did not appear to be overly directive. Our sample of mothers appears to be comparable to Mahoney and Powell's "low directive, highly responsive" mothers, whose children made the greatest developmental gains (Mahoney & Powell, 1986). Therefore, it is possible that our mothers were already interacting optimally with their children prior to treatment. Also, the statistically and clinically significant maturational improvements in these children's socio-interactional, lexical, and receptive language abilities, suggest that the children may have been progressing at an optimal rate. In this case, the extra boost afforded by changes in parental behaviour may have little or no effect on their rate of development. Collectively, these findings suggest the need to develop a screening instrument to identify those parent-child dyads with problematic interaction patterns who might benefit from intervention; not all parents may need such an intensive approach to intervention.

Alternatively, the absence of treatment effects on child outcome may reflect an inadvertant and untoward effect on maternal responsiveness. Most of the mothers in this study were highly responsive to their children's cues upon entry into the program. Perhaps the intervention program promoted an overly responsive style so they failed to discriminate between the child's adequate and inadequate forms of communication (Fischer, 1988). Training parents to respond differentially, and to withold responses to inadequate communicative behaviour might prompt the child to use more advanced forms and enhance the children's rate of communicative and linguistic development. In addition, the observed reduction in obliges following training may be counter-productive to the objectives of the program, as passive children may require directives in order to "get the interaction going". The observed

reduction in obliging behavior may have prevented parents from increasing their child's rate of participation and engagement in interaction.

Clearly, further studies are required to investigate the effectiveness of this model of intervention with parent-child dyads who exhibit (or are at risk for) interactional problems. Also, future evaluation studies should investigate the impact of training parents to respond differentially to children's inadequate communicative attempts, and of modifying parental directiveness to accomodate differences in children's assertiveness and involvement in interaction. Fey's (1986) classification scheme and Wetherby, Yonclas and Bryan's (1989) profiling work suggest distinctive learning and interaction styles which may dictate the most suitable type of parental input. Major obstacles facing interventionists include the absence of norms for parental rates of responsiveness and directiveness, and the lack of extant evidence that the quality and quantity of adult speech directed toward children is either necessary or sufficient for child language development (e.g., Hoff-Ginsberg, 1990; Shatz, 1982).

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